S/153/60/003/003/021/036/XX
B016/B058

AUTHORS: Butskus, P. F., Denis, G. I., Rutskene, A. I.

TITLE: Cyanoethylation of Some Amino Acids and Proteins

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Khimiya i khimicheskaya tekhnologiya, 1960, Vol. 3, No. 3, pp. 469 - 475

TEXT: The authors report on the cyanoethylation of amino acids and proteins by means of acrylonitrile (AN) and β-chloro propionitrile (CPN). The substances used were: β-amino ethanesulfonic acid (taurine), δ-aminovaleric acid and ε-aminocaproic acid. Products of the N-mono and N,N-dicyano ethylation were obtained thereby; γ-aminobutyric acid was treated with CPN alone. The following substances were also cyanoethylated with AN and CPN: gramicidin C, peptone and proteins (insulin, casein, blood albumin, gelatin, animal gluten, edestin, pea globulin, pepsin and nuclein). Peptone and proteins were cyanoethylated in the aqueous alkaline medium, gramicidin C, however, by means of AN in alcoholic solution. All substances treated are cyanoethylated at the amine

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group (see scheme). The authors presume that under the given conditions proteins may also be cyanoethylated at the sulfhydryl- or hydroxyl group, while the dicyano-ethylation takes place at the amine groups. They don't think it impossible that the two substances AN and CPN may to a certain degree react with other groups of the protein molecule. The authors proved that the initial substances (Table 2) showed an intensive ninhydrin reaction with blue-violet coloring and contained amino nitrogen. Neither thing was the case after cyanoethylation. In the solid state, the products of the cyano-ethylation of most proteins, peptone and gramicidin C form an almost white powder. The authors presume that the cyano-ethylation of amino acids, proteins and peptone by means of CPN proceeds over the phase of AN formation (Ref.2). When heating the products of the N-mono- and N,N-dicyano-ethylation of amino acids with 10% aqueous ammonia solution, these products are decyano-ethylated and produce the initial amino acids. The N-cyano-ethylated amino acids are also decyano-ethylated through the influence of aniline, but besides, the product of trans cyano-ethylation: β-phenylamino-propionitrile:

Cyanoethylation of Some Amino Acids and Proteins

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$HOOC(CH_2)_nNH-CH_2CH_2CN + C_6H_5NH_2 \longrightarrow HOOC(CH_2)_nNH_2 + C_6H_5NH-CH_2CH_2CN$ is formed in this case. This compound also develops at the influence of aniline on cyanoethylated proteins and peptones (Ref.11). There are 2 tables and 16 references: 10 Soviet, 3 US, 1 German, and 2 British.

ASSOCIATION: Vil'nyusskiy gosudarstvennyy universitet; Kafedra organicheskoy khimii (Vil'nyus State University; Chair of Organic Chemistry)

SUBMITTED: September 11, 1958

$$HOOC(CH_2)_nNH_2 \xrightarrow{CH_2=CHCN} HOOC(CH_2)_nNH-CH_2CH_2CN \xrightarrow{CH_2=CHCN} HOOC(CH_2)_nN(CH_2CH_2CN)_2$$

$$\text{Protein} \cdots NH_2 \xrightarrow{CH_2=CHCN} \text{Protein} \cdots NH-CH_2CH_2CN$$

$$\text{Protein} \cdots NH_2 \xrightarrow[-HCl]{Cl-CH_2CH_2CN} \text{Protein} \cdots NH-CH_2CH_2CN$$

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BUTSKUS, P.F. [Buckus, P.F.]

Decyanoethylation of N-cyanoethylated compounds. Izv.vys.ucheb.zav.; khim.i khim.tekh. 3 no.6:1108-1109 '60. (MIRA 14:4)

1. Vil'nyusskiy gosudarstvennyy universitet, kafedra organicheskoy khimii.

(Cyanoethyl group)

S/079/60/030/04/61/080
B001/B011

AUTHORS: Butskus, P. F., Denis, G. I.

TITLE: Decyanethylation of N-Cyanethylated α-Amino Acids and Their Derivatives

PERIODICAL: Zhurnal obshchey khimii, 1960, Vol. 30, No. 4, pp. 1317-1321

TEXT: The present paper deals with the hitherto neglected investigation of the lability of the bond between the cyanethyl group and the nitrogen atoms in the N-cyanethylated α-amino acids and their derivatives (Refs. 1,2). Decyanethylation was performed on some N-monocyanethyl- and N,N-dicyanethyl-α-amino acids, their esters, amides, hydrazides, N-monocyanethyl- and N,N-dicyanethyl glycyl glycine, N,N'-dicyanethyl-2,5-diketopiperazine. One of the two cyanethyl groups on the nitrogen atom is easily removable. It is split by heating dicyanethyl-α-amino acids with aqueous solutions of tertiary amines or with caustic soda (in an equimolecular ratio). The reaction occurs according to the scheme

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Decyanethylation of N-Cyanethylated α-Amino Acids and Their Derivatives

S/079/60/030/04/61/080
B001/B011

$HOOCCHN(CH_2CH_2CN)_2 \longrightarrow HOOCCHNH\text{-}CH_2CH_2CN + CH_2{=}CHCN$ (R = H, CH_3, C_2H_5, $CH(CH_3)_2$). When heating dicyanethylated amino acids with amino acids in the presence of lye, a rearrangement of the cyanethyl groups occurs. Since the cyanethylation of amino acids is a reversible reaction, a complete removal of the cyanethyl groups is possible in the monocyanethyl- and dicyanethyl derivatives of α-amino acids (Scheme 2). The yield of completely decyanethylated products attains 80%. Ammonia, hydrazine, dimethyl amine, diethyl amine, piperidine, methyl amine, ethyl amine, ethylene diamine are used as agents for this reaction. Good results are yielded on decyanethylation by a 2-10% aqueous ammonia solution. An increase in the ammonia concentration reduces the yield of decyanethylation products. When using a 10% aqueous ammonia solution, there also occurs a hydrolysis of the ester-, amide-, or hydrazide groups until a carboxyl group results. Thus, with two cyanethyl groups on the nitrogen atom, one appears to be particularly mobile. There are 3 tables and 11 references, 8 of which are Soviet.

ASSOCIATION: Vil'nyusskiy gosudarstvennyy universitet (Vil'nyus State Universitet)

Card 2/3

S/079/60/030/04/62/080
B001/B011

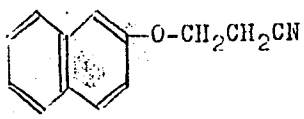
AUTHORS: Butskus, P. F., Denis, G. I.

TITLE: Decyanethylation and Re-cyanethylation of β-Alkoxy and β-Aryloxy Propionitrile

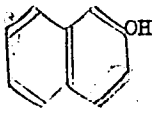
PERIODICAL: Zhurnal obshchey khimii, 1960, Vol. 30, No. 4, pp. 1321-1325

TEXT: In continuation of the previous paper (Ref. 1) concerning the reaction of aniline with β-methoxy and β-phenoxy propionitriles, giving rise to a rearrangement product, β-phenyl amino propionitrile, the authors of the present paper investigated the decyanethylation and recyanethylation of other β-alkoxy- and β-aryloxy propionitriles. β-phenyl amino propionitrile was obtained by the reaction of aniline with monocyanethyl derivatives of monovalent alcohols, with dicyanethyl derivatives of bivalent alcohols as well as with tricyanethyl glycerin. The reaction took place in an aqueous solution, in the presence of some caustic soda or triethyl amine (in one case also without alkaline agents). The cyanethyl rearrangement of monocyanethyl derivatives of o-, m-, and p-cresols, α- and β-naphthols, as well as of the dicyanethyl derivatives of bivalent phenols (of pyrocatechin, resorcin, hydroquinone) in

the presence of aromatic amines, takes place also in an aqueous solution without alkali. In this connection, both the conversion product (β-phenyl amino propionitrile) and the decyanethylation products (α- and β-naphthol as well as bivalent phenols) are separated: for an example, reaction in the case of β-cyanethyl ether of β-naphthol proceeds according to the scheme



$$+ C_6H_5NH_2 \longrightarrow$$



$$+ C_6H_5NHCH_2CH_2CN.$$

Decyanethylation occurs on heating β-phenoxy propionitrile, β-cyanethyl ether of α- and β-naphthol, as well as di-β-cyanethyl ether of pyrocatechin, resorcin, and hydroquinone in 5% lye. Phenols occur as the products of decyanethylation. On heating β-cyanethyl ether of β-naphthol in benzene with lye, the cyanethyl group passes over from the oxygen atom to the carbon atom, under the formation of 1-(β-cyanethyl)-naphthol-2 (Scheme 2). Heating of di-β-cyanethyl ether of resorcin in methanol, in the presence of sodium alcoholate,

Decyanethylation and Re-cyanethylation of β-Alkoxy and β-Aryloxy Propionitrile

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B001/B011

leads to the formation of 1-oxy-2-cyanethyl-3-cyanethoxy benzene (Scheme 3). There are 3 tables and 7 references, 5 of which are Soviet.

ASSOCIATION: Vil'nyusskiy gosudarstvennyy universitet (Vil'nyus State University)

SUBMITTED: April 20, 1959

Card 3/3

BUTSKUS, P.F.

Cyclization of the ethyl ester of N-cyanoethylglycocoll.
Zhur.ob.khim. 30 no.6:1814-1816 Je '60.
(MIRA 13:6)

1. Vil'nyusskiy gosudarstvennyy universitet.
(Cyclization) (Glycine)

BUTSKUS, P.F.

β-Bromopropionitrile as a cyanoethylating agent. Zhur. ob.khim. 30 no.6:1816-1818 Je '60. (MIRA 13:6)

1. Vil'nyusskiy gosudarstvennyy universitet.
(Propionitrile) (Cyanoethylation)

DENIS, G.I.; BUTSKUS, P.F.

Alkylation of aromatic amines with Mannich bases. Izv.vys.ucheb. zav.;khim.i khim.tekh. 4 no.3:426-428 '61. (MIRA 14:10)

1. Vil'nyusskiy gosudarstvennyy universitet imeni Kapsukasa, kafedra organicheskoy khimii.
(Amines)
(Mannich Bases)

BUTSKUS, P.F. [Buckus, P.F.]

Reaction of cyanoethylation, decyanoethylation, and percyanoethylation. Usp.khim. 30 no.11:1352-1380 N '61. (MIRA 14:10)

1. Vil'nyusskiy gosudarstvennyy universitet imeni V.Kapsukasa.
(Cyanoethylation)

BUTSKUS, F.F.

Cyanoethylation of aromatic amines. Zhur. ob. khim. 31 no.3:764-767 Mr '61. (MIRA 14:3)

1. Vil'nyusskiy gosudarstvennyy universitet.
(Cyanoethylation) (Amines)

BUTSKUS, P.F. [Backus, P.]; STONITE, R.Yu.

Cyanoethylation of aniline with β-substituted propionitriles.
Zhur. ob. khim. 31 no. 11:3638-3639 N '61. (MIRA 14:11)

1. Vil'nyusskiy gosudarstvennyy universitet.
(Aniline) (Propionitrile)

BUTSKUS, P.F. [Buckus, P.]; RAGUOTENE, N.V. [Raguotiene, N.]

P-anisidine as an agent of decyanoethylation. Zhur. ob. khim. 31 no. 11:3639-3642 N '61. (MIRA 14:11)

1. Vil'nyusskiy gosudarstvennyy universitet.
(Anisidine)

BUTSKUS, P.F. [Buckus, P.]; RAGUOTENE, N.V. [Raguotiene, N.]; DENIS, G.I.; BUTSKENE, A.I. [Butskiene, A.]

Decyanoethylation and recyanoethylation of products of N-cyanoethylation of amino acids, their derivatives, peptides, diketopiperazines, and proteins. Zhur.ob.khim. 32 no.3:738-741 Mr '62. (MIRA 15:3)

1. Vil'nyusskiy gosudarstvennyy universitet.
(Amino acids) (Cyanoethylation)

BUTSKUS, P.F. [Buckus, P.]; STONITE, R.Yu.; DENIS, G.I.; BUTSKENE, A.I. [Buckene, A.]

Cyanoethylation of p-toluidine by β-substituted propionitriles. Zhur.ob.khim. 32 no.3:820-823 Mr '62. (MIRA 15:3)

1. Vil'nyusskiy gosudarstvennyy universitet.
(Toluidine) (Propionitrile)

BUTSKUS, P.F.

Cyclization reactions on the basis of acrylonitrile. Usp.khim. 31 no.5:559-580 My '62. (MIRA 15:5)

1. Vil'nyusskiy gosudarstvennyy universitet imeni Kapsukasa. (Acrylonitrile) (Cyclization)

BUTSKUS, P.F. [Buckus, P.]; RAGUOTENE, N.V. [Raguotiene, N.]

Reaction of aromatic amines with β -substituted propionitriles.
Zhur.ob.khim. 32 no.6:1816-1820 Je '62. (MIRA 15:6)

1. Vil'nyusskiy gosudarstvennyy universitet.
(Amines) (Propionitrile)

BUT KUS, P.F. [Buckus, P.]; STONITE, R.Yu. [Stonyte, R.]

Some conversions of N,N-di (β-cyanoethyl)-benzenesulfonamide. Zhurob.khim. 32 no.6:1865-1870 Je '62. (MIRA 15:6)

1. Vil'nyusskiy gosudarstvennyy universitet.
(Benzenesulfonamide)

BUTSKUS, P.F. [Buckus, P.]; DENIS, G.I.

Reaction of crotononitrile and β-dialkylaminobutyronitriles with aromatic amines. Zhur.ob.khim. 33 no.2:629-631 F '63. (MIRA 16:2)

1. Vil'nyusskiy gosudarstvennyy universitet.
(Crotononitrile) (Butyronitrile) (Amines)

BUTSKUS, P.F. [Buckus, P.]; DENIS, G.I.; RAGUOTENE, N.V.

Anomalous reactions of d-aminopyridine alkylation. Zhur.ob.khim. 33 no.4:1236-1244 Ap '63. (MIRA 16:5)

1. Vil'nyusskiy gosudarstvennyy universitet.
(Pyridine) (Alkylation)

BUTSKUS, P.F. [Buckus, P.]

Conversion of β-cyanoethyl ester of α-naphthol to α- (β-cyanoethyl) -β-naphthol. Zhur.ob.khim. 33 no.4:1381-1382 Ap '63. (MIRA 16:5)

1. Vil'nyusskiy gosudarstvennyy universitet.
(Naphthol) (Cyanoethyl group)

L 52606-65 EWA(j)/EWT(m)/EPF(c)/EWP(j)/EWA(b)-2/EWA(c) Pc-4/Pr-4 RM

ACCESSION NR: AP5015859 UR/0063/64/009/006/0699/0700

AUTHOR: Vitorskiy, A. P.; Butsene, A. I.; Butskus, P. F.

TITLE: Relationship of the chemical structure of [illegible] and their toxicological properties

SOURCE: Vsesoyuznoye khimicheskoye obshchestvo. Zhurnal, v. 9, no. 6, 1964, 699-700

TOPIC TAGS: toxicology, organic nitrile compound, biochemistry

Abstract: The toxicity of various beta-substituted [illegible] piperidine is more toxic than its beta-substituted derivatives (with the exception of beta-halogen propionitriles). The toxic effect of [illegible] with a benzene [illegible] aromatic system. The [illegible] most pronounced in N-(beta-cyanoethyl)-piperidine, somewhat weaker in other N-cyanoethylated amines, and still weaker in other beta-substituted propionitriles. The toxicity of O- and N-cyanoethylated compounds increases with increasing length of the aliphatic radical, but the degree

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L 52606-65

ACCESSION NR: AP5015859

of increase in toxicity drops in compounds with high-molecular weights. The toxicity increases upon transition from beta-propoxy- to beta-allyloxypropionitrile; beta-ethoxypropionitrile is less toxic than beta-(ethylmercapto)-propionitrile. In the series of N-monocyanoethylated amines, the toxicity increases upon formation of their methiodides and [illegible] to tertiary amines. [illegible] in toxicity from mono- to dicyanoethylated compounds [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] as with beta-substituted butyronitriles. Propionitrile [illegible] times as acetonitrile and twice as toxic as isopropionitrile. The antidotes and antagonists generally used for cyanides and CN ions (sodium nitrite and sodium thiosulfate) do not exert a protective action [illegible] beta-substituted propionitriles. The authors [illegible] that the [illegible] activity of beta-substituted propionitriles may be [illegible] the process of trans[illegible] the beta-substituted propionitriles in which the beta-[illegible] labile are the most toxic.

Card 2/3

L 52606-65

ACCESSION NR: AP5015859

ASSOCIATION: Minskiy gosudarstvennyy meditsinskiy institut (Minsk State Medical Institute); Vil'nyusskiy gosudarstvennyy universitet (Vil'nyus State University); Vil'nyusskiy gosudarstvennyy pedagogicheskiy institut (Vil'nyus State Pedagogical Institute)

SUBMITTED: 28Feb64	ENCL: 00	SUB CODE: OC LS
NO REF SOV: 003	OTHER: 000	JPRS

BAB

Card 3/3

BUTSKUS, P.F. [Buckus, P.]; STONITE, R.Yu. [Stonyte, R.]

Transformations of N,N-di(β-cyanoethyl)sulfanilamide. Zhur.ob.khim. 34 no.2:589-593 F '64. (MIRA 17:3)

1. Vil'nyusskiy gosudarstvennyy universitet.

BUTSKUS, P.F. [Buckus, P.]; RAGUOTENE, N.V. [Raguotiene, N.]

Transformations of N-cyanoethylated α-amino acids and their derivatives. Zhur.ob.khim. 34 no.2:593-598 F '64. (MIRA 17:3)

1. Vil'nusskiy gosudarstvennyy universitet.

BUTSKUS, P.F. [Buckus, P.]; STONITE, R.Yu.

Transformations of N,N-di(β-cyanoethyl)arylsulfamides.
Zhur. ob. khim. 34 no. 3:1034 Mr '64. (MIRA 17:6)

1. Vil'nyusskiy gosudarstvennyy universitet.

BUTSKUS, P. F.

Recyanoethylation as a method for determining the structure of cyanoethylated compounds. Zhur. ob. Khim. 34 no.6:2093 Je '64. (MIRA 17:7)

1. Vil'nyusskiy gosudarstvennyy pedagogicheskiy institut.

BUTSKUS, P.F. [Buckus, P.]; BUTSKENE, A.I. [Buckiene, A.]

Reaction of α-amino acids with acrylamide. Zhur. ob. khim. 34 no. 5:1407-1409 My '64. (MIRA 17:7)

1. Vil'nyusskiy gosudarstvennyy universitet.

DENIS, G.I.; CHEKUOLENE, L.V. [Cekuoliene, L.]; BUTSKUS, P.F. [Buckus, P.]

Alkylation of aniline by Mannich bases. Zhur. ob. khim. 34 no. 5:1638-1639 My '64. (MIRA 17:7)

1. Vil'nyusskiy gosudarstvennyy universitet.

DENIS, G.I.; IONAYTIS, S.I. [Jonaitis,S.]; BUTSKUS, P.F. [Buckus,P.]

Cyanoethylation with β-chloropropionitrile. Zhur. ob. khim. 34 no.7:2477-2478 Jl '64 (MIRA 17:8)

1. Vil'nyusskiy gosudarstvennyy universitet i Vil'nyusskiy gosudarstvennyy pedagogicheskiy institut.

DENIS, G.I.; CHEKUOLENE, L.V. [Cekuoliene, L.]; BUTSKUS, P.F. [Buckus,P.]

Reaction of aromatic amines with Mannich bases. Zhur. ob. khim. 34 no.7:2479 Jl '64 (MIRA 17:8)

BUTSKUS, P.F. [Buckus, P.]; RAGUOTENE, N.V. [Raguctiene, N.]; BUTSKENE, A.I. [Buckiene, A.]

Alkylation of 4-methyl-2-aminopyridine. Zhur. ob. khim. 34 no.11: 3847-3848 N '64 (MIRA 18:1)

1. Vil'nyusskiy gosudarstvennyy universitet i Vil'nyusskiy gosudarstvennyy pedagogicheskiy institut.

BUTSKUS, P.F. [Buckus,P.]; DENIS, G.I.; BUTSKENE, A.I. [Buckiene, A.]

Cyanoethylation of aromatic amines with β-chloropropionitrile.
Zhur. ob. khim. 34 no.12:4119 D '64 (MIRA 18:1)

1. Vil'nyusskiy gosudarstvennyy universitet i Vil'nyusskiy gosudarstvennyy pedagogicheskiy institut.

DENIS, G.I.; CHEKUOLENE, L.V. [Cekuoliene, L.]; BUTSKUS, P.F. [Buckus, P.]

Alkylation of aromatic amines by β-dimethylaminopropiophenone. Zhur. org. khim. 1 no.6:1080-1082 Je '65. (MIRA 18:7)

1. Vil'nyusskiy gosudarstvennyy universitet.

BUTNAR, T.F. [Buckna, T.]

Chemistry of the Baltic [illegible] on the 25th anniversary of the re-establishment of Soviet Power in Lithuania, Latvia, and Estonia. Khim. nauk. khim. 25 no.9:1503-1512 '65.

(MIRA 18:10)

BUTSKUS, P.F. [Buckus, P.]; BUTSKENE, A.I. [Buckiene, A.]

Reaction of β-alanine with acrylamide, allyl cyanide, and crotononitrile. Zhur. VKHO 10 no. 6:706-707 '65 (MIRA 19:1)

1. Vil'nyusskiy gosudarstvennyy pedagogicheskiy institut i Vil'nyusskiy gosudarstvennyy universitet. Submitted May 6, 1965.

S/526/62/000/024/002/013
D234/D308

AUTHORS: Kremnyov, O.O., Semylet, Z.V. and Suts'kyy, M.D.

TITLE: Investigation of heat loss and resistance of the elements of ribbed plate heat exchangers having mesh or perforated caps with deflected edges

SOURCE: Akademiya nauk Ukrayins'koyi RSR. Instytut teploenerhetyky. Zbirnyk prats'. no. 24, 1962. Teploobmin ta hidrodynamika, 14-23

TEXT: Data were processed in the form of a dependence between the similarity criteria $Nu = cRe^n$. Re was calculated from $Re = wd_{equ}/\nu$, $d_{equ} = 4F/p$. For perforated caps the convective heat loss coefficient was determined from a well-known relation. The mean air temperature in heat loss study was 35°C, the air velocity 2.5 - 25 m/sec, which corresponds to Re = 400-4000. Resistance was measured under isothermal conditions with mean air temperature 25°C and velocity 2.0 - 25 m/sec. The dependences of reduced heat loss coeffi-

Card 1/2

cient on the air velocity and pressure drop, of Nu on Re and of the hydraulic resistance on Re are plotted. The flow in straight smooth channels is thermally little efficient. To improve it, ribs are cut into separate elements and the edges of these are deflected. The optimum distance between the openings and the optimum edge deflection are 2 mm and 0.5 mm respectively. The resistance of elements with chessboard perforation and edge deflection to one side is the same as that of elements with corridor perforation (3.2 times that of a smooth rib, the heat loss being 2.1 times that of a smooth rib). Placing the openings on one side of the rib decreases the heat loss. There are 7 figures and 2 tables.

BUTSLOV, M.M.

BUTSLOFF M M

621.383.2 3781

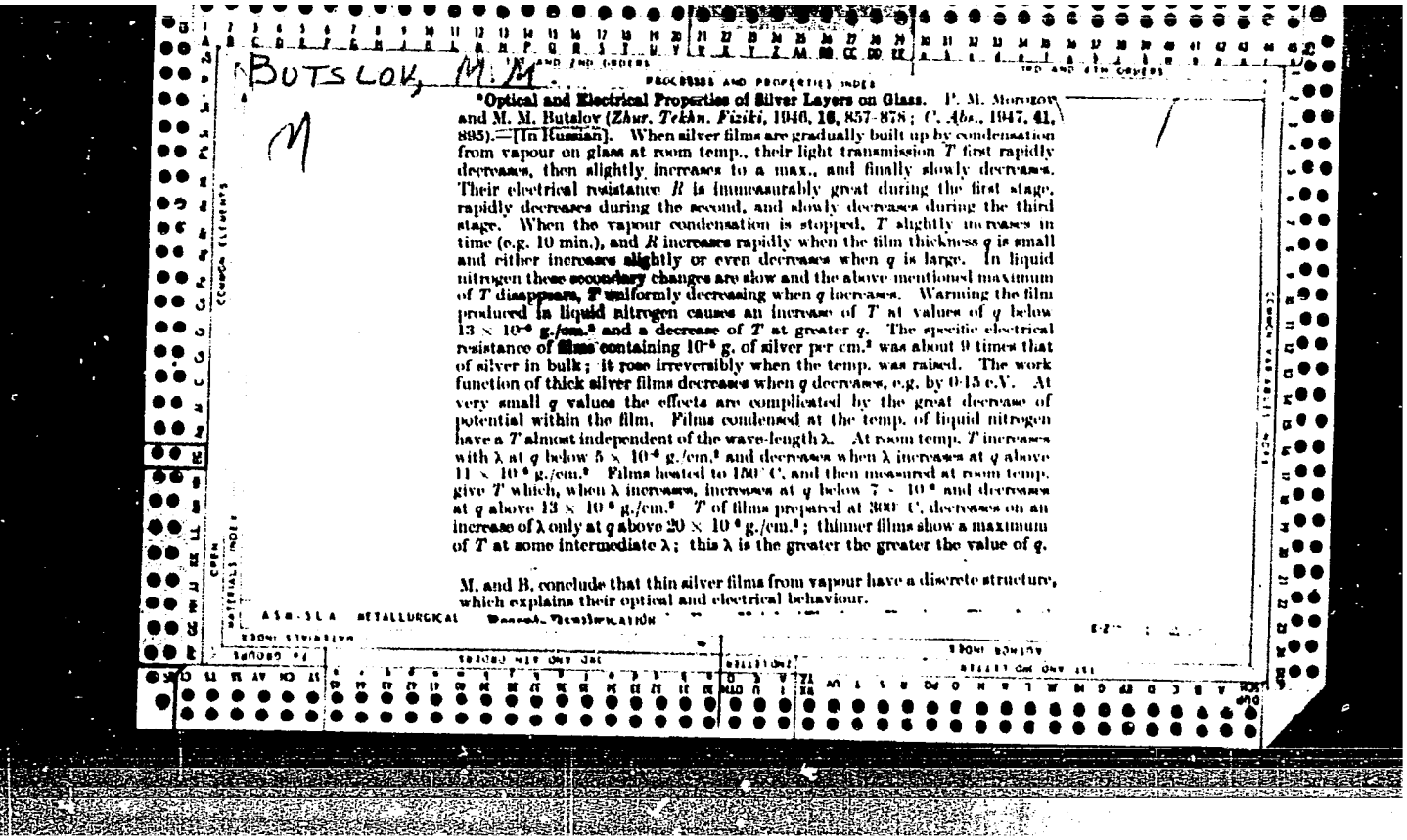
Certain Physical Properties of Caesium Oxide Photocathodes. P. M. Morozov & M. M. Butslov. (*Bull. Acad. Sci. U.R.S.S., sér. phys.*, 1944, Vol. 8, No. 5, pp. 291–303. In Russian.) A preliminary report on a detailed experimental investigation carried out to determine the spectral distribution of sensitivity, the energy distribution of photo-electrons, and the work function of caesium oxide photocathodes. Curves are plotted in Figs. 2 and 3 showing the spectral sensitivity when the photocathode is illuminated from the rear and the front respectively. The spectral distribution of sensitivity is closely connected with the thickness of the silver layer, and therefore with the thickness of the photocathode. Photocathodes of a given thickness, and therefore of a predetermined spectral sensitivity, can be obtained by varying the depth of the oxidation of the silver layer, and Fig. 4 gives sensitivity curves for photocathodes of different thickness. The difficulties of ensuring the required depth of oxidation are pointed out, and the structure of the photocathodes is discussed in detail. The electrical and optical properties of the silver layer are greatly affected by the temperature of the glass envelope during the deposition of the silver. The volt-ampere characteristics of the photocathodes illuminated from the front (thick lines) and from the rear (dotted lines) are shown in Fig. 6. It appears from these curves that the energy distribution of photo-electrons in this type of cathode is similar to that in the case of pure metals. An irregularity in the energy distribution is apparent, however, on wavelengths of 750 mμ and more. The reasons for this irregularity are discussed.

Measurements of the work function are described. The value was found to be of the order of 0.75–0.90 V, but may vary with time by as much as [illegible] eV over a period of 10–500 hours.

An abstract in English was noted in 2033 of July.

BUTSLOV, M.M.

LO: Russia
SP: Electronics
RE: Author, together with P. Morosov, of "Physical Properties of Silver-Caesium-Oxide Cathodes", an abstract of a paper of the Acad. Sci. USSR. The spectral distribution of the sensitivity of a caesium-oxide photocathode of variable thickness has been investigated, and found to be directly connected with the thickness. The Structural peculiarity of the cathode leads to a spectral absorption and scattering of the incident light. The function was found to be 0.78-0.90 V.
PUB: J. Phys., USSR, 1945, Vol.9, No. 1, pp 63-64
SO: Wireless Engineer, Vol. XXIII, No. 274, Jul 46



BUTSLOV, M. M

M

PROCESSES AND PROPERTIES INDEX

***Optical and Electrical Properties of Silver Layers on Glass.** P. M. Morozov and M. M. Butslov (*Zhur. Tekhn. Fiziki*, 1946, **16**, 857-878; *C. Abs.*, 1947, **41**, 895).—[In Russian]. When silver films are gradually built up by condensation from vapour on glass at room temp., their light transmission T first rapidly decreases, then slightly increases to a max., and finally slowly decreases. Their electrical resistance R is immeasurably great during the first stage, rapidly decreases during the second, and slowly decreases during the third stage. When the vapour condensation is stopped, T slightly increases in time (e.g. 10 min.), and R increases rapidly when the film thickness q is small and either increases slightly or even decreases when q is large. In liquid nitrogen these secondary changes are slow and the above mentioned maximum of T disappears, T uniformly decreasing when q increases. Warming the film produced in liquid nitrogen causes an increase of T at values of q below 13×10^{-6} g./cm.^{2} and a decrease of T at greater q. The specific electrical resistance of films containing 10^{-5} g. of silver per cm.^{2} was about 9 times that of silver in bulk; it rose irreversibly when the temp. was raised. The work function of thick silver films decreases when q decreases, e.g. by 0·15 e.V. At very small q values the effects are complicated by the great decrease of potential within the film. Films condensed at the temp. of liquid nitrogen have a T almost independent of the wave-length λ. At room temp. T increases with λ at q below 5×10^{-6} g./cm.^{2} and decreases when λ increases at q above 11×10^{-6} g./cm.^{2} Films heated to 180° C. and then measured at room temp. give T which, when λ increases, increases at q below 7×10^{-6} and decreases at q above 13×10^{-6} g./cm.^{2} T of films prepared at 300° C. decreases on an increase of λ only at q above 20×10^{-6} g./cm.^{2}; thinner films show a maximum of T at some intermediate λ; this λ is the greater the greater the value of q.

M. and B. conclude that thin silver films from vapour have a discrete structure, which explains their optical and electrical behaviour.

BUTSLOV, M. M., Engr. Cand. Tech. Sci.

Dissertation: "Investigation of the Emission Properties and Development of the Production Technology of Semitransparent Oxygen-Cesium Photocathodes." Moscow Order of Lenin Power Engineering Inst imeni V. M. Molotov, 23 May 47.

SO: Vechernyaya Moskva, May, 1947 (Project #17836)

BUTSLOV, M.M.

USSR/ Nuclear Physics - Luminescent chamber

Card 1/1 Pub. 22 - 12/52

Authors : Zavoyskiy, E. K., Member-Corresp. of the Acad. of Scs. of the USSR; Smolkin, G. E.; Plakhov, A. G., and Butslov, M. M.

Title : Luminescent chamber

Periodical : Dok. AN SSSR 100/2, 241-242, Jan 11, 1955

Abstract : A device for studying nuclear reactions is described. It is given the name "luminescent chamber." In construction, it resembles the Wilson chamber, however it has a higher resolving power in respect to time, and permits the detection of relativistic particles of $10 - 10^{-}$ sec. duration. The registration of such particles is done in the chamber with the help of a series of electron-optical converters. Two USA references (1951-1953). Illustrations; graph.

Institution : .....

Submitted ; .....

BUTSLOV, M.M.

SUBJECT USSR / PHYSICS CARD 1 / 2 - 1911
AUTHOR ZAVOJSKIJ, E.K., BUTSLOV,M.M., SMOLKIN,G.E.
TITLE The Utmost Amplification Coefficient and the Inherent (Own) Noises of Electron-Optic Light Amplifiers.
PERIODICAL Dokl.Akad.Nauk, 111, fasc.5, 996-999 (1956)
Issued: 1 / 1957

There exists a certain limiting value η_{lim} of this amplification coefficient which corresponds to the smallest possible signal, an electron emitted from the input photocathode of the light amplifier. η_{lim} is here roughly estimated according to the formula $\eta_{lim} = n\sigma$, where n denotes the number of electrons inciding on the surface unit of the screen which is necessary for a normal recording with an optic density of 0,2 to 0,4. With $n \sim 10^9$ (at $\sim 2.10^4$ eV) and $\sigma \sim 10^{-4}$ cm^2 one obtains η_{lim} 10^5. The authors were able to realize one single electron with the type 95 light amplifier. For this purpose at first the electrons of the dark emission of the input photocathode were used. According to various experiments the majority of light flashes does not correspond to single electrons at operating voltages of from 8.000 to 20.000 V, but to whole groups of electrons (electron packets), which fly away from the input cathode. There are thus two different components of the dark emission of the SbCs of the photocathode: the "single-electronic" and the "multielectronic" component. From the minimum optic density of the negative it is not possible to register the single electrons, because then separation of the one-electron component is too difficult.

Dokl.Akad.Nauk, 111, fasc.5, 996-999 (1956) CARD 2 / 2 PA - 1911

For the reliable separation and registration of an electron, and for the purpose of determining the character of the emission of the multi-electron component of inherent (own) noises the defocussing of the electronic image in the input cascade of the light amplifier was used here. On this occasion quantitative measurements of both components of the dark current were successfully carried out. The fact that the two components are created in different manners is, above all, indicated by the dependence on temperature. When the photocathode was cooled in liquid nitrogen, the single electron current vanished completely, which indicates its thermoelectronic origin. At the same time the multi-electron component of the dark current remained practically unchanged. The data available at present are not sufficient for the determination of the origin of the multi-electronic dark current. Possible causes are the autoelectronic emission from the unevennesses (spheroliths) of the photocathode or the bombarding of the cathode with heavy ions.
The aforementioned experimental data prove that the utmost coefficient of electron-optic amplification is attained and that a further increase of sensitivity must be attempted by increasing the quantum yield of the photocathode. Besides, the registration of an electron permits the study of such phenomena at which only one photoelectron (or a secondary electron) flies away from the input photocathode.

INSTITUTION: Corr. Mbr. A USSR (for Zavoyskiy)

NYRIKOV, V. G., KUSHNIR, Yu. M., BUTSLOV, M. M. and BORDOVSKIY, G.

Institute for Electronic Optics of the State Committee for Radio Electronics, Moscow.

"Use of an Image Amplifier for Increasing the Distinctness of the Image in an Electron Microscope."

report presented at 4th Intl. Conference on Electron Microscopy, Berlin GFR. 10 - 17 Sep 1968.

SOV-120-58-3-17/33

AUTHORS: Kushnir, Yu. M., Nyrykov, V.G., Butslov, M. M. and Bordovskiy, G. A.

TITLE: Application of an Electron-Optical Converter in an Electron Microscope (Primeneniye elektronno-opticheskogo preobrazovatelya v elektronnom mikroskope)

PERIODICAL: Pribory i Tekhnika Eksperimenta, 1958, Nr 3, pp 73-75 and 2 plates (USSR)

ABSTRACT: Electron-optical converters may be used in the observation of images of low brightness in electron microscopes. It is shown that the use of such converters enables one to observe and focus images in both transmission and reflection microscopes with current densities at the screen of 10^5 - 10^6 electrons per cm^2 and thus study objects which under the more usual conditions may become damaged. The microscope employed for this work was the MEM-50 described in Ref.2. The principle of the method is shown in Fig.1. Here 1 is the tube of the transmission or reflection microscope, 2 is the observation window, 3 is the photographic camera, 4 is the screen of the electron microscope, 5 is the objective, 6 is the photocathode of the converter, 7 is the cascade electron optical converter, 8 is the screen of the converter, 9 is an additional objective,

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Application of an Electron-Optical Converter in an Electron Microscope

10 is the photographic camera and 11 is a probe (Faraday cap) used to measure the electron current. Fig.5 shows an electron microphotograph of the surface of a piece of copper covered by an electrolytically deposited layer of nickel. This photograph was taken with a reflection microscope. Observation and focussing in this case could only be carried out using a cascade electron-optical converter. There are 6 figures, no tables and 3 references, of which 2 are Soviet and 1 is French.

SUBMITTED: September 15, 1957.

1. Electron microscopes--Equipment 2. Electron optics--Applications

BUTSLOV, M. M.

AUTHORS: Butkevich, V.G. and Butslov, M.M. 109-3-7/23

TITLE: Some Investigations of the "Shot-through" Secondary Electron Emission (Nekotoryye issledovaniya vtorichnoy elektronnoy emissii na prostrel)

PERIODICAL: Radiotekhnika i Elektronika, 1958, Vol.III, No.3, pp. 355 - 370 (USSR).

ABSTRACT: The phenomenon of the penetration of electrons through thin, metallic foils was first observed by Lenard (Ref.1), and since then, a number of workers have investigated this effect, but it did not have any practical applications until 1955-56, when a number of American workers developed multi-stage electron-optical amplifiers (Refs. 7 and 8). The aim of this work is to analyse the basic characteristics of the "shot-through" secondary electron emission of thin aluminium foils and, in some cases, of magnesium oxide-coated aluminium foils. Pure aluminiun foils were prepared by condensing the metal in vacuum on to a nitrocellulose film; the film was then dissolved. The resulting foils had a mirror-like surface, characterised by an almost total absence of any holes. The experimental investigation was carried out in a special instrument based on the spherical-condenser method. The instrument is shown in Fig.1. It consists of a sphere containing the investigated film in its centre.

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Some Investigations of the "Shot-through" Secondary Electron Emission 109-3-7/23

A beam of primary electrons is accelerated and focused by appropriate electrodes and directed on to the investigated foil or film. The secondary electrons at the opposite side of the foil are scattered at various angles and a fraction of them passes through the aperture in the sphere and is collected by a system of plates and collector grids. The diameter of the investigated foils was 5 mm. The primary electrons could be accelerated up to 40 kV and the system could be evacuated down to pressures of 3×10^{-7} mmHg. The experimental equipment permitted the investigation of the energy distribution of the secondary "shot-through" electrons as well as their angular distribution. The experimental results are shown in Figs. 2 to 17. Fig. 2 shows the angular distribution of the secondary electrons for the foils having a thickness $d = 0.2\ \mu$ and an accelerating potential U_1 of 6 kV; the curves, whose areas are proportional to the number of electrons within a given energy band, are shown for the same film in Fig.3. Fig. 4 shows the secondary emission coefficient σ as a function of U_1 for d ranging from 0.2 to 1.4 μ, while Fig.5 illustrates the accelerating potential U_1 necessary to produce the "shot-through"

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Some Investigations of the "Shot-through" Secondary Electron Emission

effect in the foil of a given thickness; the thickness is given in mg/cm^2. Figs. 6, 7 and 8 show the curves of the angular distribution of electrons at the exit side of the films of various thicknesses; similar curves are shown in Fig.9 for the groups of slow electrons, while Fig.10 shows the energy distribution of the slow electrons. Figs. 12 and 13 illustrate the energy losses of the electrons during their passage through the foil, while Fig.14 illustrates σ as a function of U_1 for aluminium foils coated with a layer of magnesium oxide. The electron energy distribution of MgO-Al foils is illustrated in Fig.15, while the angular distribution of the electrons for the same type of film is shown in Fig.16. The secondary emission coefficient for various film thicknesses, for both the rapid and slow electrons, is shown in Fig.17, from which it follows that any increase in thickness of the film results in a decrease in the number of the slow electrons and the curves $\sigma = f(U_1)$ become less steep. The decrease in the slope of $\sigma = f(U_1)$ for increasing foil thicknesses is due to an increase in the diffusivity of the primary electron beam and to an expansion

Some Investigations of the "Shot-through" Secondary Electron Emission

of the area which produces the maximum number of the secondary electrons. The relationship between the rapid and slow electrons, as a function of the accelerating potentials, permits the determination of a functional dependence between the number of electrons penetrating the film and its thickness for various values of the accelerating potential. The resulting curves for an aluminium film are shown in Fig.18. Analogous curves were evaluated for Al - MgO foils and these are shown in Fig.19.
There are 19 figures and 13 references, 4 of which are English, 3 German and 6 Russian.

SUBMITTED: June 20, 1957

AVAILABLE: Library of Congress

Card4/4

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3.1240

S/035/60/000/009/010/016
A001/A001

Translation from: Referativnyy zhurnal, Astronomiya i Geodeziya, 1960, No. 9, pp. 69-70, # 9083

AUTHORS: Butslov, M.M., Kalinyak, A.A., Kamionko, L.A.

TITLE: Results of the Photometric Processing of Mars Photographs Taken in the Near Infrared Region of Spectrum

PERIODICAL: Izv. Gl. astron. observ. v Pulkove, 1958, Vol. 21, No. 3, pp. 63-71 (Engl. summary)

TEXT: Photographs of Mars were taken from August 28 to September 18, 1956, by means of an electronic-optical converter mounted on the MTM-500 reflector of the Krymskaya astrofizicheskaya observatoriya (Crimean Astrophysical Observatory) (equivalent focus - 60 m). The diameter of the image was up to 7.5 mm. Effective wavelengths were λ 8,400 (exposure - 0.02 sec) and λ 9,830 (exposure - 0.1 sec). Some photographs were photometrically compared with the brightness of the lunar ring formation Plato, and the brightness of the latter was compared with that of the Sun by means of a screen with small apertures producing attenuation by a factor of 96,200. Mars albedo was obtained as the average from 100 points. The

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Results of the Photometric Processing of Mars Photographs Taken in the Near Infrared Region of Spectrum

albedo values are as follows:

A	λ
8,400	4.16×10^{-2}
9,830	4.02×10^{-2}

The graph with isophots is presented. At the edge of the disc, isophots approach concentric circles in their shape. This fact permitted the study of the mean brightness course B_M for the disc zone with incidence angles of solar rays i greater than 50°. This course can be approximately represented by the formula: $B_M = B_\Pi(0)\cos i + B_p(0)\sec i$ which is derived from the V.G.Fesenkov formula for small values of the atmosphere optical thickness. $B_\Pi(0) = 0.74$ is the mean brightness of the Martian surface at $i = 0$; $B_p(0) = 0.22$ is the brightness of light scattered in the atmosphere at the same i value. The fact that the sum of these values is close to unity indicates that intrinsic absorption in the Martian atmosphere is insignificant. The correlation is discussed between the brightness distribution of visual and infrared rays over the disc.

I.I. Lebedeva

Translator's note: This is the full translation of the original Russian abstract.

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3(1)

AUTHORS: Butslov, M. M., Zavoyskiy, Ye. K., Corresponding Member, Academy of Sciences, USSR, Kalinyak, A. A., Nikonov, V. B., Prokof'yeva, V. V., Smolkin, G. Ye. SOV/20-121-5-13/50

TITLE: The Use of Multistage Electron-Optical Light Amplifiers in Astrophysics (O primenenii mnogokaskadnykh elektronno-opticheskikh usiliteley sveta v astrofizike)

PERIODICAL: Doklady Akademii nauk SSSR, Vol 121, Nr 5, pp 815 - 818 (USSR)

ABSTRACT: This paper investigates some problems connected with the application of electron-optical light amplifiers in astrophysics. The authors estimate the increase in efficiency of the utilization of the photon flux with respect to the usual photographic method. Under the investigated conditions, and in the case of equal dimensions of the pictures, the efficiency of the electron-optical method is by $\sim 4.10^3$ times higher than in ordinary photography. An increase in scale on the photocathode of the light amplifier reduces the increase in sensitivity of the electron-optical method compared with a usual photographic plate by 160 times. An estimation of the sensitivity

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of the light amplifiers gives a value of the order of 1000. The use of an electron-optical amplifier usually cannot increase the penetration range of the telescope. But the reduction of the times of exposure by hundreds of times of its amount due to the high sensitivity of the light amplifier essentially changes the possibilities of the astrophysical investigation. The short times of exposure permit the investigation of rapidly varying processes of very faintly visible objects and a considerable increase of the utilization coefficient of the astrophysical instruments. The reduction of the times of exposure is very important for astrospectroscopy. The above-discussed considerations are confirmed by the results obtained by experiments carried out by the authors in the Krymskaya astrofizicheskaya observatoriya AN SSSR (Crimean Astrophysical Observatory AS USSR). The proper noises of the light amplifier may be neglected in comparison with the background of the sky. According to the experimental values, the use of the light amplifier permitted a reduction of the times of exposure approximately to a thousandth part of their former amount

which satisfactorily agrees with the above-given estimate. A figure shows the photographs of 2 extragalactic nebulae which were taken by means of a light amplifier. There are 4 figures, 1 table, and 6 references, 3 of which are Soviet.

ASSOCIATION: Krymskaya astrofizicheskaya observatoriya Akademii nauk SSSR (Crimean Astrophysical Observatory AS USSR) Glavnaya astronomicheskaya observatoriya Akademii nauk SSSR (Astronomical Main Observatory, AS USSR)

SUBMITTED: April 14, 1958

BUTSLOV, M.M.

Electron optical image converter for the study of ultra high-speed processes. Usp.nauch.fot. 6:76-83 '59. (MIRA 13:6)
(Electron optics) (Photography, Instantaneous)

BUTSLOV, M.M.; ZAVOSKIY, Ye.K.; PLAKHOV, A.G.; SMOLKIN, G. Ye.; FANCHENKO, S.D.

Electron optical method of the photography of ultrahigh-speed processes. Usp.nauch.fot. 6:84-89 '59. (MIRA 13:6)
(Electron optics)
(Photography, Instantaneous--Scientific applications)

9(3)

AUTHOR: Butslov, M. M.

SOV/48-23-5-4/31

TITLE: Electron Optical Intensification of Brightness of an X-ray Image (Elektronno-opticheskiye usiliteli yarkosti rentgenovskogo izobrazheniya)

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1959, Vol 23, Nr 5, pp 552 - 557 (USSR)

ABSTRACT: Intensity and resolving power of luminescence X-ray screens for visual observation and for X-ray pictures in diagnosis and industrial investigations are not satisfactory. To obtain more or less adequate results a very hard X-ray light must be applied, by which apparatus are rendered massive and dangerous for patients and the roentgenological staff. The present paper investigates the possibility of decreasing intensity and hardness of X-ray light by electron optical methods. Mention is made of American and Dutch publications in this field and of investigations begun independently thereof in the Soviet Union in 1950. The present paper consists for the most part of a description and investigation of the apparatus built by Westinghouse and Philips. A graph is shown in this connection. The resolving power of the

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screens, the brightness of the image and its contrast are accurately dealt with. A similar Russian development is more briefly dealt with in the final part. It may be seen from the graph that the screen image is projected onto a semi-transparent photocell through a light optical system, and is then projected onto the "operation screen" by way of a light amplifier. This screen is photographed or visually observed. Mention is then made of earlier published papers by the author and Ye. K. Zavoyskiy. These papers deal with electron optical cascade converters with a 10^6 - 10^7-fold amplification, the resolving power of which attains 10^{-2} cm. The author then deals with the deterioration of image quality in optics and additional appliances as well as with their effects. There are 3 figures.

24(7) SOV/48-23-9-26/57

AUTHORS: Butslov, M. M., Vinogradova, A. K., Ivantsov, L. M., Kutuzova, G. N., Mandel'shtam, S. L.

TITLE: A Photoelectric Stylometer With Visual Control of the Position of Invisible Lines of the Spectrum

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1959, Vol 23, Nr 9, pp 1110 - 1112 (USSR)

ABSTRACT: By replacing the glass-dispersion optical system by a quartz- (Fig 1) or diffraction optical system (Fig 2), the range of applicability of the FES-1-type stylometer may be considerably extended, especially if, by means of an electron-optical converter, the invisible lines of the spectrum may be detected. Two variants of the type FES were developed and tested by the authors; the converter operates with an antimony-cesium-cathode; the device has an uv-transmissive window, so that a visual observation of the spectrum within the wave length range of 6000-2400 Å is possible. Figures 1 and 2 show the course of rays in these two instruments, in which the shifting of the spectrum with respect to the outlet slit is brought about by rotating the dispersion system. The line intensity of these

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instruments is comparable to that of instruments, the spectrum of which has a length of 200-300 Å. Next, investigation of the lines by means of the electron-optical converter is described, and for both instruments a survey of the principal characteristic features is given. The focal distances of the mirror objectives of the collimator are 600 and 750 mm respectively, the refraction angle (quartz prism) in one of the instruments is 60°, whereas the diffraction grating of the other has 600 grating lines per millimeter. The electron-optical arrangement makes it possible to observe the fine details of complicated spectra, especially of iron, and this device is said to have a great future. There are 2 figures.

BUTSLOV, M.M.; KORN, M.Ya.; MUROMTSEV, S.N. [deceased]

Use of the image translator (brightness intensifier) in light and fluorescence microscopy. Dokl. AN SSSR 139 no.5:1225-1226 Ag. '61. (MIRA 14:8)

1. Institut epidemiologii i mikrobiologii im. N.F. Gamaleya AMN SSSR. Predstavleno akademikom V. P. Linnikom.
(Photomicrography)
(Image converters)

36499
S/051/62/012/003/010/016
E202/E435

94.2120

AUTHORS: Butslov, M.M., Plakhov, A.G., Shapkin, V.V.

TITLE: High intensity electron-optical system for spectral investigation of plasma

PERIODICAL: Optika i spektroskopiya, v.12, no.3, 1962, 419-423

TEXT: Electron-optical system consisting of a simple multistage impulse converter employing electrostatic focusing and a quadripole magnetic lens was designed and tested using Hg spectrum. The reason for building the instrument was a projected study of low luminosity impulse plasmas which fail to be recorded in ordinary instruments. The general design represents a further development of a previously described design. The main advantage of this type of lens lies in the possibility of changing the scale of the electron image along two mutually perpendicular axes without impairing the quality of the picture. This was utilized by reducing the height of the spectral line giving good time resolution in continuous linear scanning, while widening the width of the line, i.e. increasing the dispersion of the system. The arrangement is shown diagrammatically (Fig.4).

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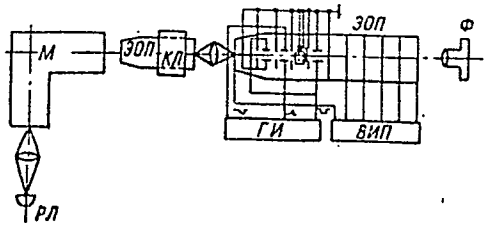
High intensity electron-optical ...

There are 5 figures.

SUBMITTED: March 18, 1961

Fig.4.



РЛ - Hg lamp; М - monochromator; КЛ - quadripole lens;
ЭОП - electron-optical converter; ГИ - impulse generator;
ВИП - HT supply; Ф - camera.

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S/089/62/012/005/008/014
B102/B104

24.6720

AUTHORS: Butslov, M. M., Medvedev, M. N., Filippov, P. I., Chuvilo, I. V., Sheshunov, V. M.

TITLE: Recording of the Vavilov-Cherenkov cone from isolated particles

PERIODICAL: Atomnaya energiya, v. 12, no. 5, 1962, 412

TEXT: The Cherenkov cone [Abstracter's note: Identical with Vavilov-Cherenkov cone] from single cosmic particles was recorded with an electron-optical converter controlled by scintillation counters. The radiation cone was made visible on a photographic film: the picture shows a central light spot surrounded by a ring of other light spots, partially flown together. The broken shape of the ring is due to the fact that the number of photons per mm^2 did not exceed 15. Examination of the photograph shows that the Cherenkov light is non-uniformly distributed: in addition to the separate spots, a light arc is formed, its central angle being the maximum for the emitter material considered.

Card 1/2

S/089/62/012/005/009/014
B102/B104

24.6200

AUTHORS: Akimov, Yu. K., Butslov, M. M., Savchenko, O. V., Soroko, L. M.

TITLE: Controllable luminescence chamber with a scintillator of a working volume of 2500 cm^3

PERIODICAL: Atomnaya energiya, v. 12, no. 5, 1962, 413-415

TEXT: An apparatus working with a controllable scintillation chamber (Fig. 1) which can be used to photograph charged cosmic particles is described. The scintillator measures 130·150·150 mm and is composed of 20,000 filaments, packed in layers as ABAB.. with A⊥B. The layers are separated by black paper sheets to absorb scattered light. The filaments, ~1 mm in diameter, are made of a polymer on basis of polystyrene + 1% tetraphenyl butadiene or 2% terphenyl and 0.02% ROROR. Since the de-excitation times are $(3-5)\cdot10^{-9}$ sec and the delay times in the control circuits are less than 0.1 μsec, the chamber can be controlled by an image memory with a very short storage time.. The image from any

element is stored in the single chamber electron-optical converter (EOP) which contains a luminophor of constant de-excitation time (~ 0.7 μsec) for the fast component; its conversion efficiency is 10% of that of ZnS(Ag). The control system consists of three scintillation counters connected in coincidence; the passage of a charged particle through the coincidence pulse starts two control schemes. In the first a square pulse of 1 μsec duration is formed; this opens the electron-optical shutter; in the second, a square pulse of negative polarity is formed; this is retarded by 25 μsec to reach maximum brightness. The track projection of a particle passing through the scintillator is thus obtained as a sequence of light spots (for a photoelectron about 10, which is the seventh part of the number of filament layers joined with the photocathode). The apparatus is suitable, e. g., for investigating such reactions as $\pi^+ \to \pi^0 + e^+ + \nu$ or $\mu \to e + \nu$. There are 3 figures.

SUBMITTED: July 22, 1961

Fig. 1. Complete diagram of apparatus with luminescence chamber.
Legend: (1) Scintillation counters, (2) scintillator of the chamber,
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Controllable luminescence chamber with ... S/089/62/012/005/009/014
B102/B104

(3) coincidence circuit, (4) block for control pulse delay, (5) pulse generator, (6) high-voltage pulse generator, (7) EOP, (8) objective, (9) deflecting plate of electron-optical shutter, (10), multi-stage EOP, (11) coil, (12) photographic apparatus.

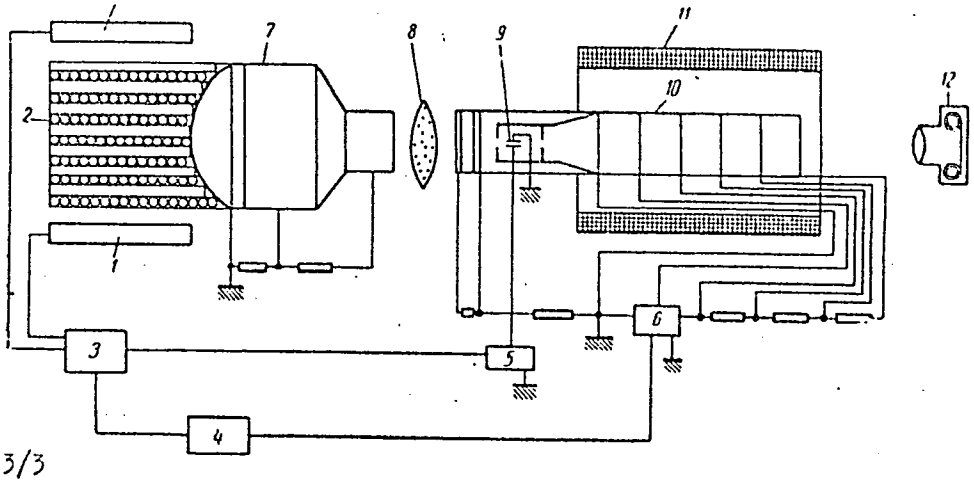

FIG. 1

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37397

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E032/E314

3,1260

AUTHORS: Butslov, M.M., Kopylov, I.M., Nikonov, V.B., Severnyy, A.B. and Chuvayev, K.K.

TITLE: Experiments in electron-optical photography of galaxies in hydrogen light using the 2.6 m reflector of the Crimean Astrophysical Observatory

PERIODICAL: Astronomicheskiy zhurnal, 4. 39, no. 2, 1962, 315 - 322 + 3 plates

TEXT: Detailed studies of extragalactic nebulae require the use of large telescopes. As regards detecting apparatus, the use of ordinary photographic techniques in conjunction with narrow-band filters necessitates long exposures and is therefore inconvenient in practice. The authors have investigated therefore the possibilities of image-converters as a means of avoiding these disadvantages. An image-converter was set up in the direct focus of the 2.6 m reflector of the Crimean Astrophysical Observatory. The immediate object was to investigate the hydrogen emission in a number of galaxies. Four light colour filters were introduced in front of the converter and

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the screen of the latter was photographed by a motion-picture camera. Altogether 58 galaxies were photographed in H_α and other light. Photographs of 10 of these are reproduced and their features are described (NGC 604, 1569, 4214, 4449, 4490, 4736, 5194, 5457, 6822 and 6946). Many unknown clouds of hydrogen-emission were detected in the galaxies. In many cases there is no correspondence between hot-star clusters and hydrogen clouds. The hydrogen component shows greater concentration in the equatorial planes than the stellar component. In some galaxies the nuclei consist of isolated condensations. The dimensions of the nuclei in H_α light are in some cases appreciably larger than in other light, although in a number of cases the reverse situation obtains. In several galaxies, streams or ejections from the nucleus, which are visible only in H_α light, were detected.

S/033/62/039/002/011/014
Experiments in electron-optical... E032/E314

ASSOCIATION: Krymskaya astrofizicheskaya observatoriya Akademii nauk SSSR (Crimean Astrophysical Observatory of the Academy of Sciences, USSR)

SUBMITTED: December 31, 1961

Card 3/3

BUTSLOV, M.M.; KOMAROV, V.I.; SAVCHENKO, O.V.; ZRELOVA, N.N., tekhn. red.

[Isotropic discharge chamber for recording the tracks of relativistic charged particles] Izotropnaia razriadnaia kamera dlia registratsii trekov reliativistskikh zariazhennykh chastits. Dubna, Ob"edinennyi in-t iadernykh issledovanii, 1964. 16 p. (MIRA 17:4)

BOBROV, V.P.; BRAGIN, Yu.N. [Brahin, IU.N.]; BUTSYK, Yu.V.; LEVENSHTEYN, M.L.; SOKOLOV, V.A.; YUDEL'SON, A.A.

Find of potassium salt in the Donets Basin. Geol. zhur. 24 no.4:107-108 '64. (MIRA 18:2)

1. Trest "Artemgeologiya".

BUTSYKIN,Ya.; VIZERSKIY,B.

Continuous work schedules are the basis of success. Mast. ugl. 4 no.1:5-6 Ja '55. (MLRA 8:6)

1. Nachal'nik uchastka [no.36] (for Butsykin). 2. Pomoshchnik nachal'nika uchastka [no.36](for Vizerskiy).
(Coal mines and mining)

BUTT, D. M.

Author: Butt, D.M.

Title: General Technology of Silicates. Authorized as a Textbook for Technical Schools
591 pp., illus.

Date: 1950. Moscow

Subject: Silicates

Available: Library of Congress, Call No. TP807.B94

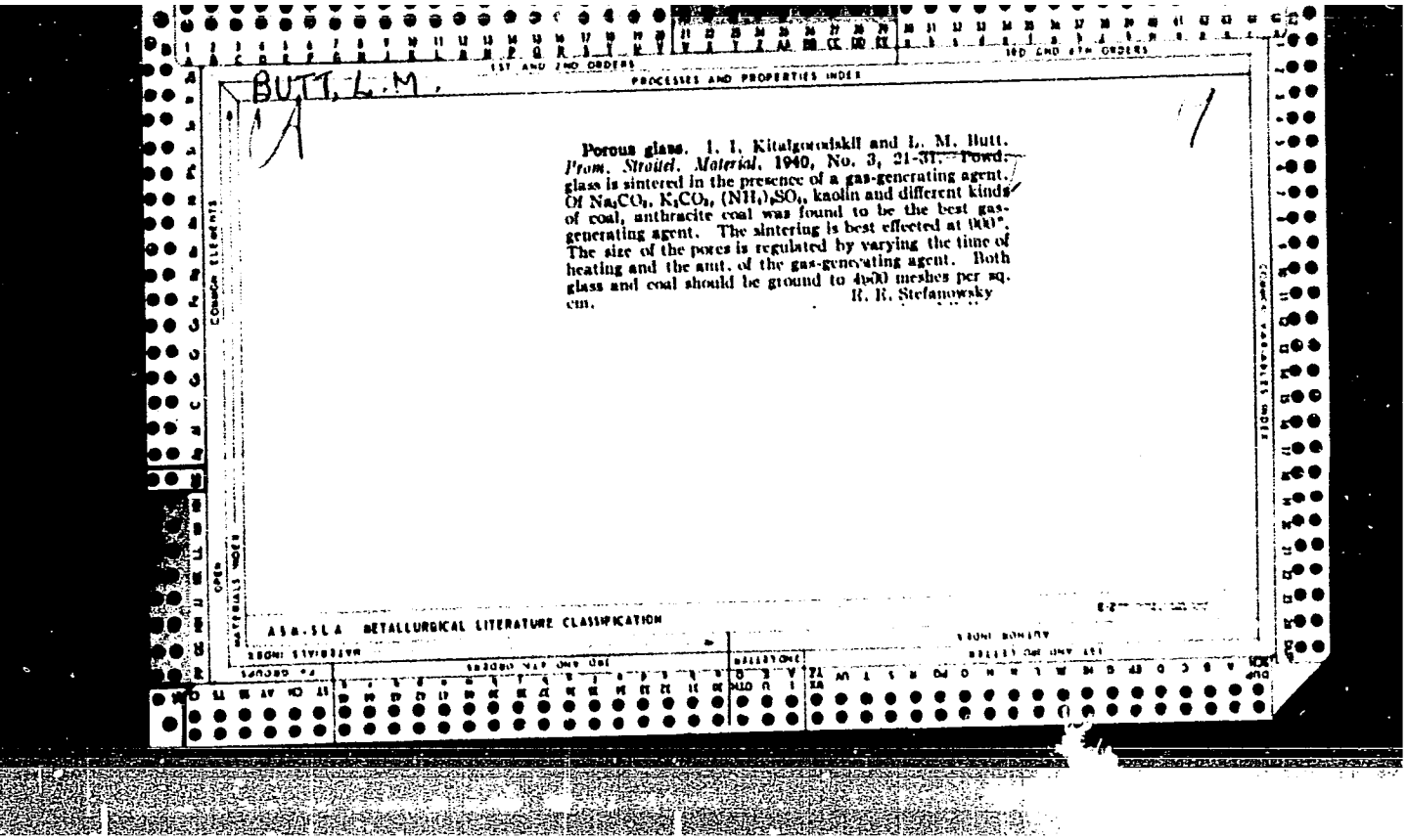
Source: Lib. of Cong. Subj. Cat., Apr.-June 1952

BUTT, J. M., prof., dr.; TIMASZEW, W. W., [Timashev, V. V.] kandydat nauk technicznych (Moskwa)

Boundary saturation of Portland clinker with lime. Cement wapno gips 16/26 no.7:211-217 '61.

1. Czlonek korespondent Akademii Budownictwa i Architektury ZSSR (for Butt).

(Clinker brick)



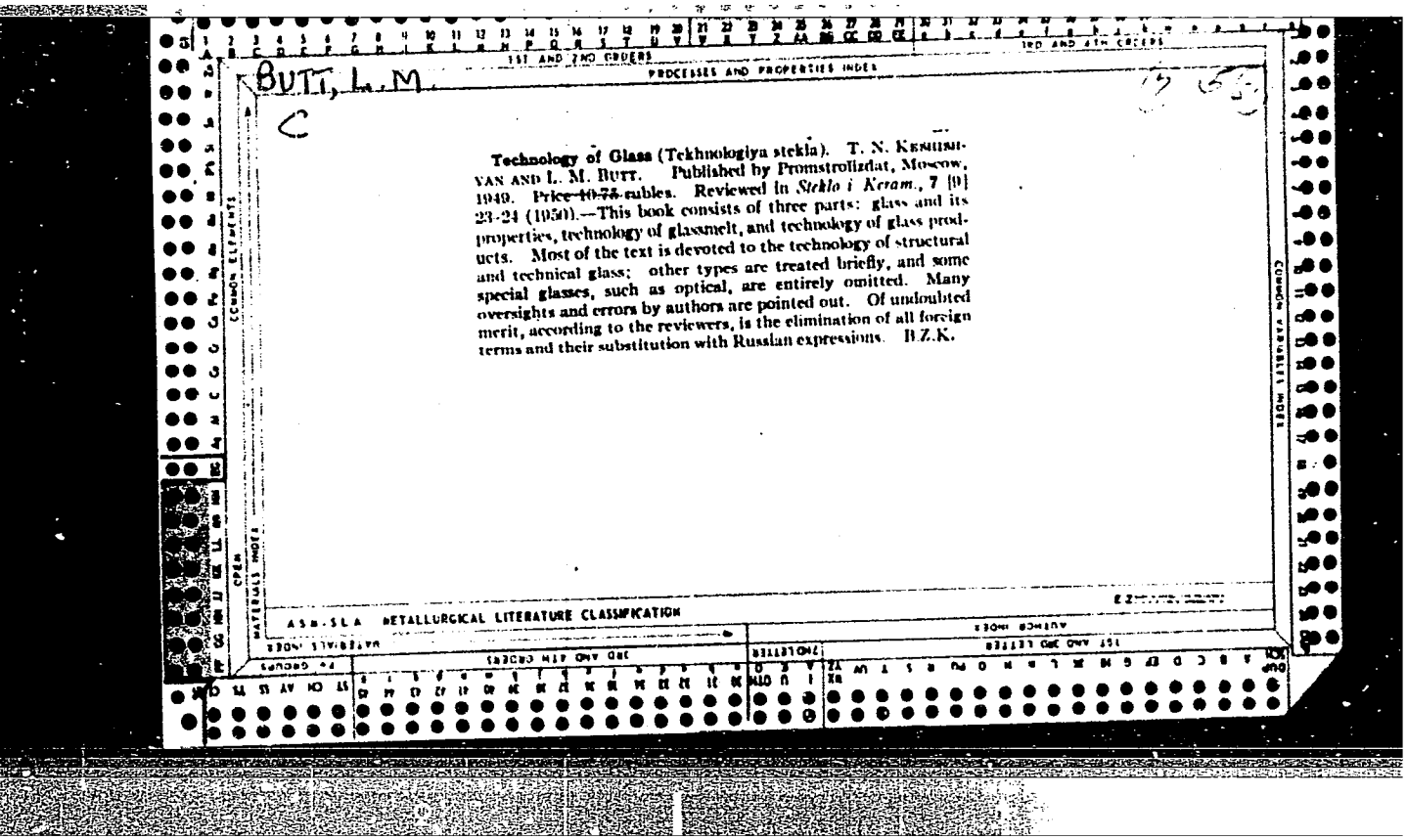
BUTT, L.M.

PROCESSES AND PROPERTIES INDEX

Porous glass. I. I. Kitaigorodskii and L. M. Butt. *Trans. Struct. Material.* 1940, No. 3, 21-31. Powdered glass is sintered in the presence of a gas-generating agent. Of Na_2CO_3, K_2CO_3, $(NH_4)_2SO_4$, kaolin and different kinds of coal, anthracite coal was found to be the best gas-generating agent. The sintering is best effected at 900°. The size of the pores is regulated by varying the time of heating and the amt. of the gas-generating agent. Both glass and coal should be ground to 4900 meshes per sq. cm.

R. E. Stefanowsky

ASA-SLA METALLURGICAL LITERATURE CLASSIFICATION



BUTT, L.M.

C

Technology of Glass (Tekhnologiya stekla). T. N. Kebinskiy-van and L. M. Butt. Published by Promstroiizdat, Moscow, 1949. Price 10-75 rubles. Reviewed in *Steklo i Keram.*, 7 [9] 23-24 (1950).—This book consists of three parts: glass and its properties, technology of glassmelt, and technology of glass products. Most of the text is devoted to the technology of structural and technical glass; other types are treated briefly, and some special glasses, such as optical, are entirely omitted. Many oversights and errors by authors are pointed out. Of undoubted merit, according to the reviewers, is the elimination of all foreign terms and their substitution with Russian expressions. B.Z.K.

TUKH, I.I., inzh.; BUTT, L.M., nauchnyy red.; GLADYSHEVA, S.A., red. izd-va; MEDVEDEV, L.Ya., tekhn.red.; RUDAKOVA, E.I., tekhn.red.

[Manufacturing sheet glass by the vertical drawing method] Proizvodstvo listovogo stekla metodom vertikal'nogo vytiagivaniia. Moskva, Gos. izd-vo lit-ry po stroit., arkhit. i stroit. materialam, 1958. 226 p. (MIRA 12:2)
(Glass manufacture)

15(2), 15(6)

AUTHORS: Kitaygorodskiy, I. I., Butt, L. M., Gaysinskiy, V. L., Myasnikov, K. A.

SOV/72-59-12-6/19

TITLE: The Choice of an Expedient Design for a Plant Producing Foam Glass

PERIODICAL: Steklo i keramika, 1959, Nr 12, pp 15 - 21 (USSR)

ABSTRACT: The Soviet method of producing foam glass from powders elaborated by the Kafedra stekla MKhTI imeni Mendeleyeva (Chair of Glass, MKhTI imeni Mendeleyev) found world-wide appreciation. At present, the Gomel'skiy stekol'nyy zavod (Gomel' Works) produces foam glass in the shape of blocks of various sizes in accordance with the above method. In the Institut stekla (Institute of Glass) experiments were made with the manufacture of special parts of foam glass for the insulation of pipe lines. In the USSR the production of foam glass develops slowly, a fact explained by the great production cost. The authors of the present paper, however, refuted this assumption on the basis of data supplied by the Konstantinovskiy zavod "Avtosteklo" (Konstantinovka Works "Avtosteklo"), the Ivotskiy zavod (Ivot Works) and the Gomel'skiy zavod (Gomel' Works) et al.

Card 1/3

The Choice of an Expedient Design for a Plant Producing Foam Glass SOV/72-59-12-6/19

In the course of the past ten years a number of various plants were designed, constructed and tested by Soviet engineers. The displacing possibilities of molds in the furnace are shown in figures 1-5. Sine 1952 experiments have been made in the USSR concerning the production of foam glass as a continuous band without molds. In 1957-1958 an automatic experimental plant AUP-1 was tested in the Gomel' Works the design of which was worked out in the Giprosteklo upon suggestions by the authors' collective L. M. Butt, M. I. Steshenko, V. L. Gaysinskiy, V. A. Il'inskiy, K. A. Myasnikov, I. S. Blagoobrazov, and L. S. Koleshko. A scheme is given in figure 6. Experiments with the above plant were made by the Gomel' Works, Giprosteklo, the Institute of Glass and its Proyektno-konstruktorskoye byuro (Planning and Design Bureau) (see Ref 1). The temperature curve of the furnace is plotted in figure 7. At present the Giprosteklo is working out the AUP-2 automatic plant. In figure 8 the scheme of a conveyer belt appliance is given which has been elaborated by I. I. Kitaygorodskiy, B.I.Borisov, L. M. Butt, and M. I. Kokon'. The Proyektno-konstruktorskoye byuro Instituta stekla (Planning and Design Bureau of the Glass

Card 2/3

The Choice of an Expedient Design for a Plant Producing Foam Glass SOV/72-59-12-6/19

Institute) is working out an assembly based on the foam glass formation on heat-proof steel conveyer belt. The productiveness of the establishment of departments and works for the production of foam glass may be seen from the table. In conclusion the authors consider plants producing foam glass without molds in the shape of a continuous band as the most perfect and prospective ones since they permit the automation of production processes. Until a typical industrial conveyer belt plant will be created it is recommended to build continuous type furnaces for the production of foam glass, which have stood the test. There are 8 figures and 1 table.

Card 3/3

BUTT, Lev Mikhaylovich; POLLYAK, Vera Vasil'yevna. Prinimala uchastiye POTOTSKAYA, G.V. BREKHOVSKIKH, S.M., nauchnyy red.; GLADYSHEVA, S.A., red.izd-va; OSENKO, L.M., tekhn.red.

[Technology of glass] Tekhnologiia stekla. Moskva, Gos.izd-vo lit-ry po stroit., arkhit. i stroit.materialam, 1960. 417 p. (MIRA 13:12)

(Glass manufacture)

BARBARINA, T.M.; BUBYR', N.F.; BUTT, L.M.; VEL'SOVSKIY, V.N.; GORLOV, Yu.P.; GRIBANOVSKIY, V.G.; DROZDOV, I.Ya.; YEREMIN, I.A.; ZEZIN, V.G.; KEVESH, P.D.; KOCHAROV, E.P.; KOSYREVA, Z.S.; LEVIN, S.N.; MAKHNOVICH, A.T.; MERZLYAK, A.N.; RODOV, E.S.; ROZHNOV, A.I.; SEREBRYANSKAYA, B.I.; SUKHAREV, M.F.; USTENKO, A.A.; KHOMENKO, Z.S.; SHMIDT, L.M.; ETIN, A.O.; YAKHONTOVA, N.Ye.; KITAYTSEV, Vladimir Andreyevich, prof., doktor tekhn. nauk, red.; SKRANTAYEV, B.G., glav. red.; TROKHIMOVSKAYA, I.P., zam. glav. red.; KRAVCHENKO, I.V., red.; KITAYGORODSKIY, I.I., red.; KRZHEMINSKIY, S.A., red.; ROKHVARGER, Ye.L., red.; BALAT'YEV, P.K. red.

[Manual on the manufacture of heat insulating and acoustical materials] Spravochnik po proizvodstvu teploizoliatsionnykh i akusticheskikh materialov. Moskva, Stroizdat, 1964. 524 p. (MIRA 18:1)

SEVER'YANOV, A.; BUTT, M., starshiy master.

Unusual visual aid. Prof.-tekhn. obr.13 no.3:24-25 Mr '56.
(MIRA 9:7)

1.Prepodavatel' remeslennogo uchilishcha No.3, Moskovskaya oblast'.
(Visual education)

BUTT, M.

27-5-5/25

AUTHOR: Severyanov, A., Meritorious Teacher of Professional and Technical Education of RSFSR. Butt, M. Deputy Director of Trade School # 3 (Moscow district)

TITLE: Laboratory Practice in Professional Training (Laboratornyy praktikum po proizvodstvennomu obucheniyu).

PERIODICAL: Professional'no-Tekhnicheskoye Obrazovaniye, 1957, # 5(144), p 6 and 7 (USSR)

ABSTRACT: The author points out the importance of close coordination between the teaching of theory and practical training in trade schools. The students after theoretical lectures in special technology, must learn to apply this knowledge in practical training.
The authors state that in the post-war years the Soviet industry has turned toward complicated mechanization and automatization requiring increased skill of laborers. They describe in detail the lathe operators' training, the laboratory practice, and the type of lessons the students receive.
The article contains 2 tables.

INSTITUTION: None
PRESENTED BY:
SUBMITTED:
AVAILABLE: At the Library of Congress
Card 1/1

Zamestitel' direktora remeslennogo uchilishcha No.3 (Moscow oblast')

BUTT, T.S.; KALLIGA, G.P.; POLUBOYARINOV, D.N.

Changes in the physical and mechanical properties of clay in the process of heating. Ogneupory 21 no.7:318-321 '56. (MLRA 10:1)

1. Nauchno-issledovatel'skiy institut stroykeramiki.
(Clay--Testing) (Kaolin--Testing)

MIRONOV, Al.; BUTT, Vl.

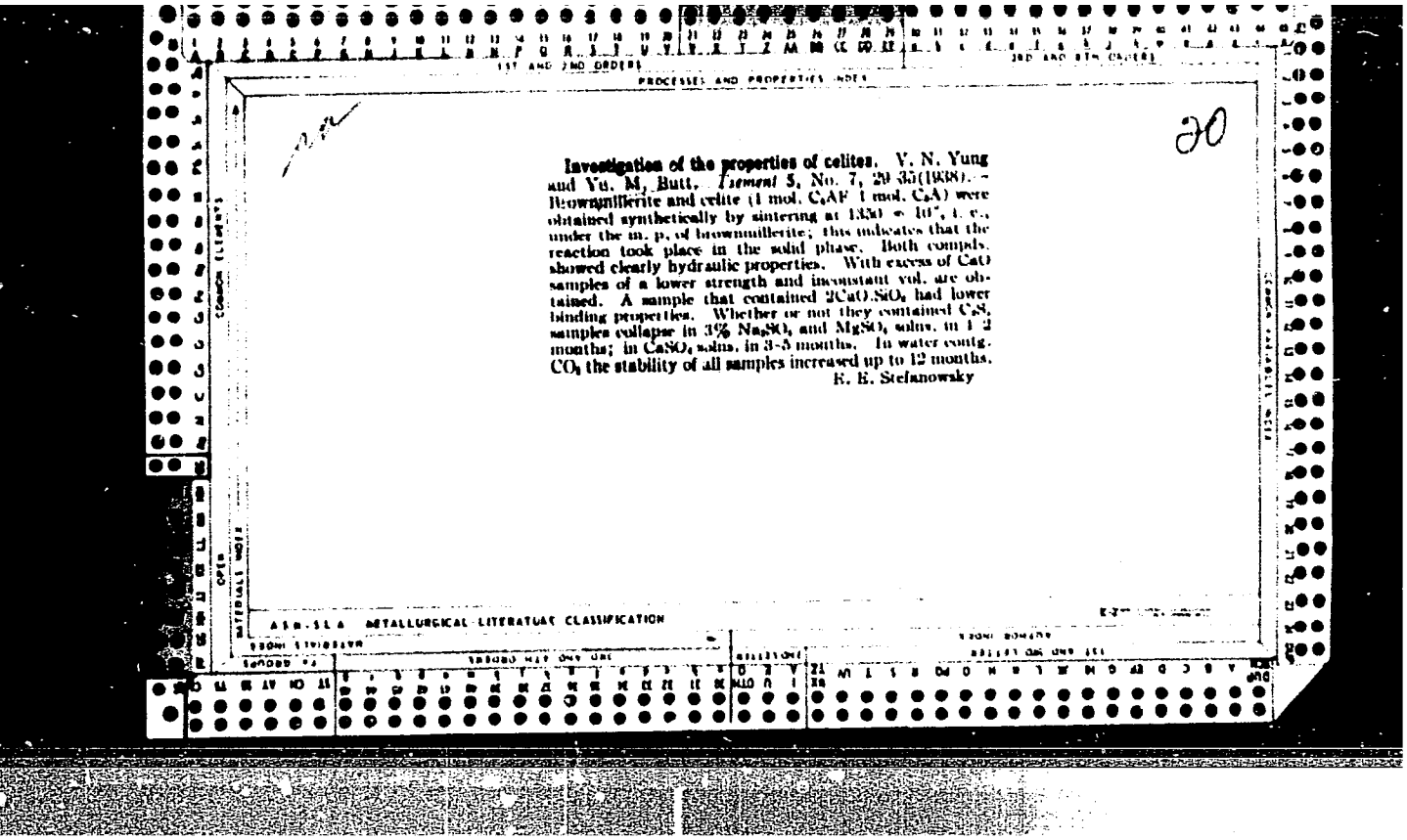
Feathers of a firebird. Mest.prom.i khud.promys. 2 no.1:24-25 Ja '61. (MIRA 14:4)
(Moscow--Textile design)

EARLIER PUBLICATIONS FOR THIS AUTHOR ARE AVAILABLE IN THE INACTIVE FILE -- WE WILL PULL THEM UPON REQUEST.

BUTT, Yu. M.

Effect of small additions of limestone on the quality of portland cement. V. N. Yung. A. S. Panteleev, Yu. M. Butt, and L. G. Bubenin. 1'sement 14, No. 3, 11 15 (1918); cf. C..1.43,1515h. Cement mixes were prepdcontg. 1 10% of lime by grinding together clinker and lime. All of the se mixes contained 3% of gypsum. The mixes were aged for 10 days and then made into test specimens. The limestone was ground finer (1 5 u) than the clinker. Mixes contg. up to 10% of lime had a somewhat higher strength after 3 and 7 days than mixes without lime. Mixes with up to 5% of lime were stronger after 28 days. Mixes with 10% of lime showed a lower strength in 2 cases out of 3 after 28 days. the results point to the role of microfillers in cement mixes. It is not the total wt. of microfiller but its dispersion which emphasizes its role in cement mixes since the total surface area of the filler is important.

M. Hosch



PROCESSES AND PROPERTIES INDEX

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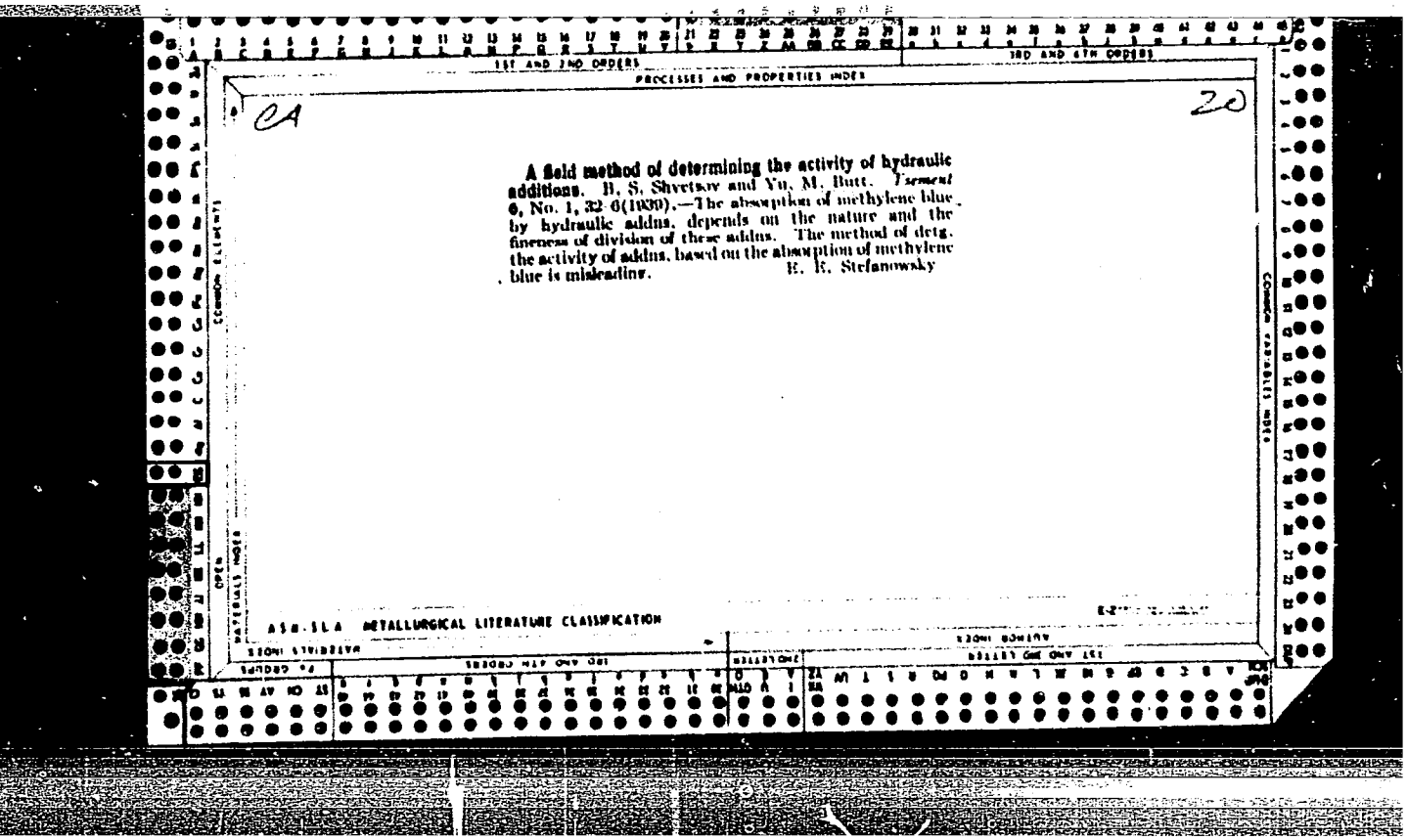
Investigation of the properties of celites. V. N. Yung and Yu. M. Butt. *Tsement* 5, No. 7, 29-33(1938).—Brownmillerite and celite (1 mol. C_4AF 1 mol. C_3A) were obtained synthetically by sintering at 1350 ± 10°, i. e., under the m. p. of brownmillerite; this indicates that the reaction took place in the solid phase. Both compds. showed clearly hydraulic properties. With excess of CaO samples of a lower strength and inconstant vol. are obtained. A sample that contained $2CaO.SiO_2$ had lower binding properties. Whether or not they contained C_3S, samples collapse in 3% Na_2SO_4 and $MgSO_4$ solns. in 1-2 months; in $CaSO_4$ solns. in 3-5 months. In water contg. CO_2 the stability of all samples increased up to 12 months.
E. E. Stefanowsky

A58-SLA METALLURGICAL LITERATURE CLASSIFICATION



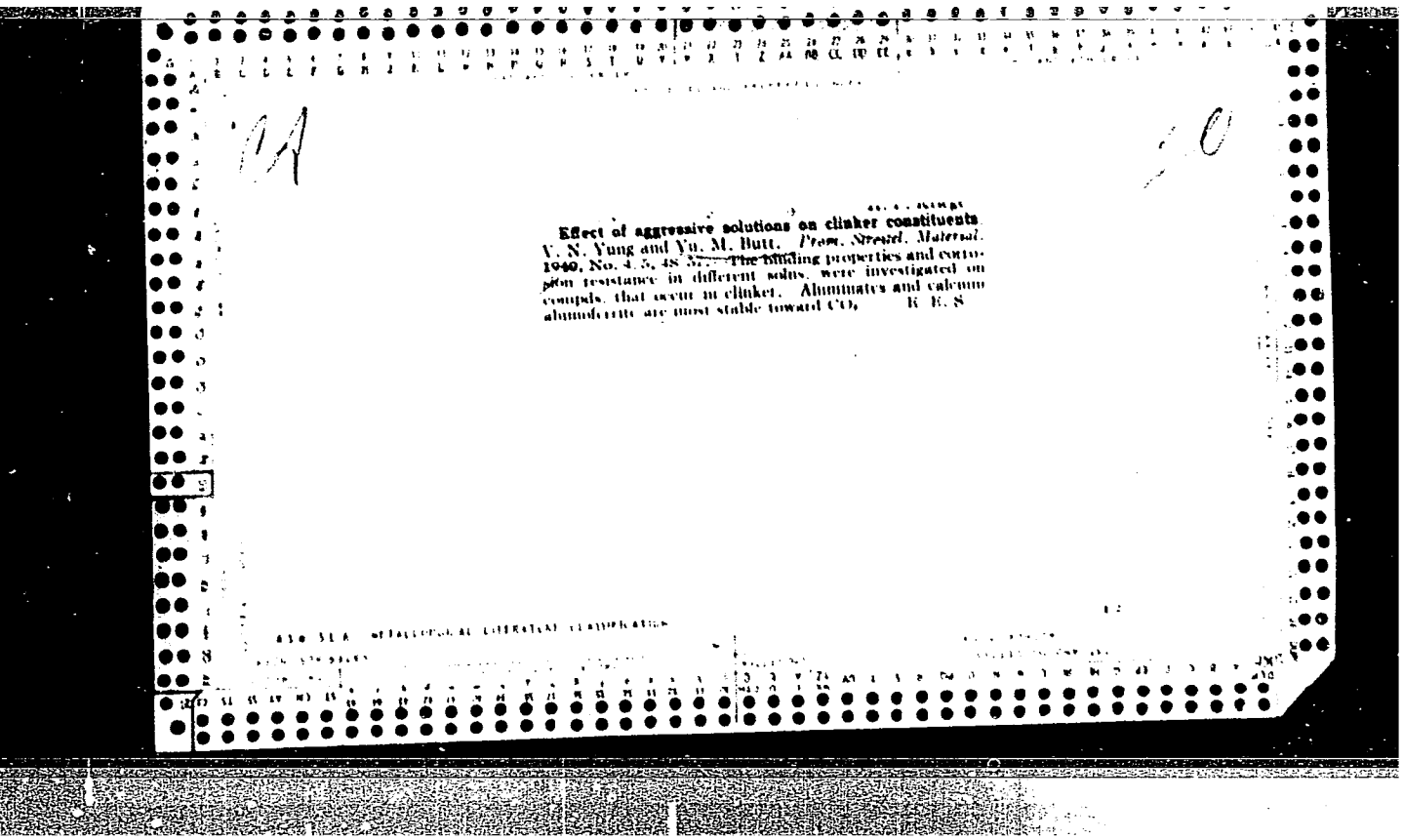
PROCESSES AND PROPERTIES INDEX

CA

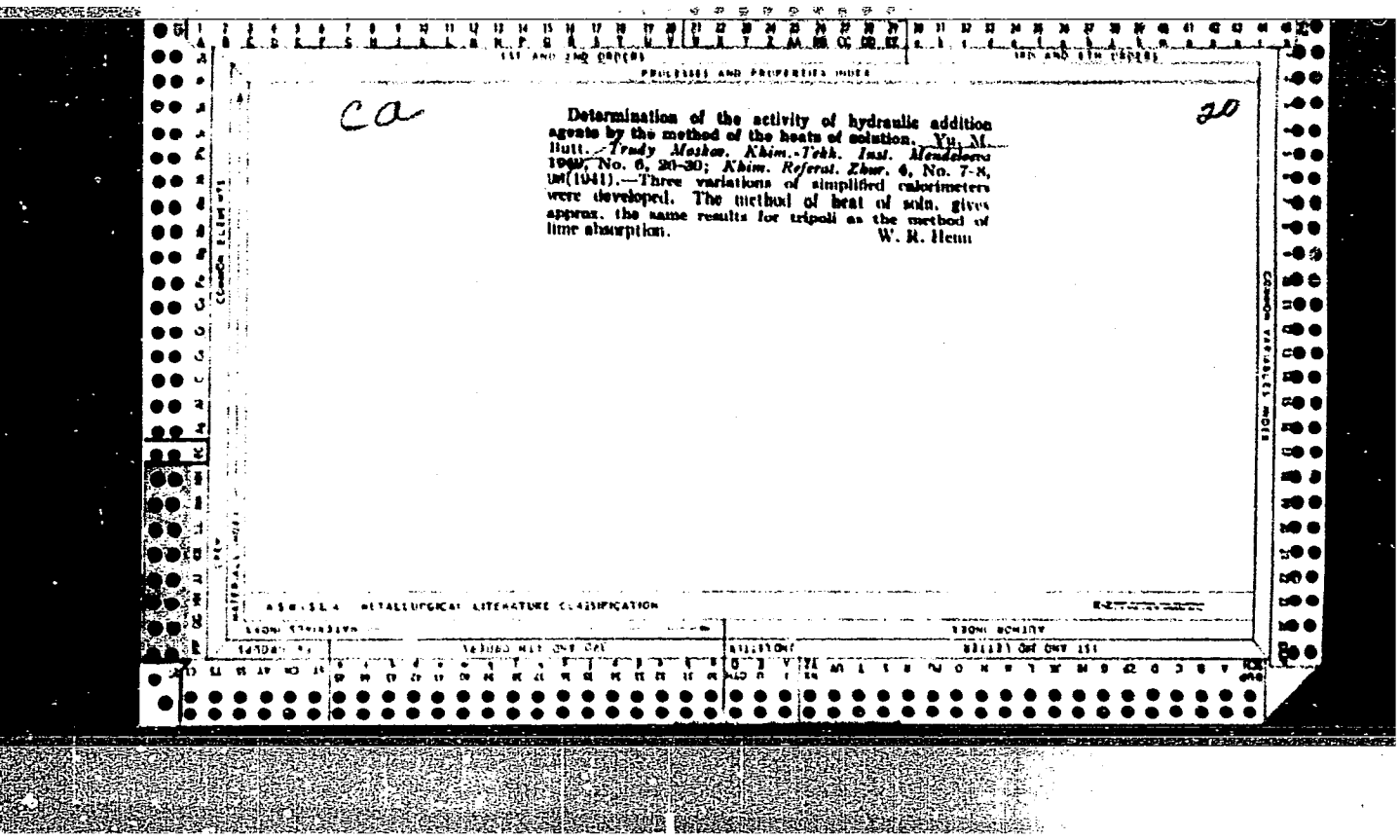
20

A field method of determining the activity of hydraulic additions. B. S. Shvetsov and Yu. M. Butt. *Tsement* 6, No. 1, 32-6(1939).—The absorption of methylene blue by hydraulic addns. depends on the nature and the fineness of division of these addns. The method of detg. the activity of addns. based on the absorption of methylene blue is misleading. E. K. Stefanowsky

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



Effect of aggressive solutions on clinker constituents. V. N. Yung and Yu. M. Butt. *Prom. Stroitel. Material.* 1940, No. 4, 5, 48 37.—The binding properties and corrosion resistance in different solns. were investigated on compds. that occur in clinker. Aluminates and calcium alumoferrite are most stable toward CO_2. R. E. S.



CA

20

Determination of the activity of hydraulic addition agents by the method of the heats of solution. Yu. M. Butt. *Trudy Moskov. Khim.-Tekh. Inst. Mendeleeva* 1940, No. 6, 20-30; *Khim. Referat. Zhur.* 4, No. 7-8, 138(1941).—Three variations of simplified calorimeters were developed. The method of heat of soln. gives approx. the same results for tripoli as the method of lime absorption.

W. R. Henn